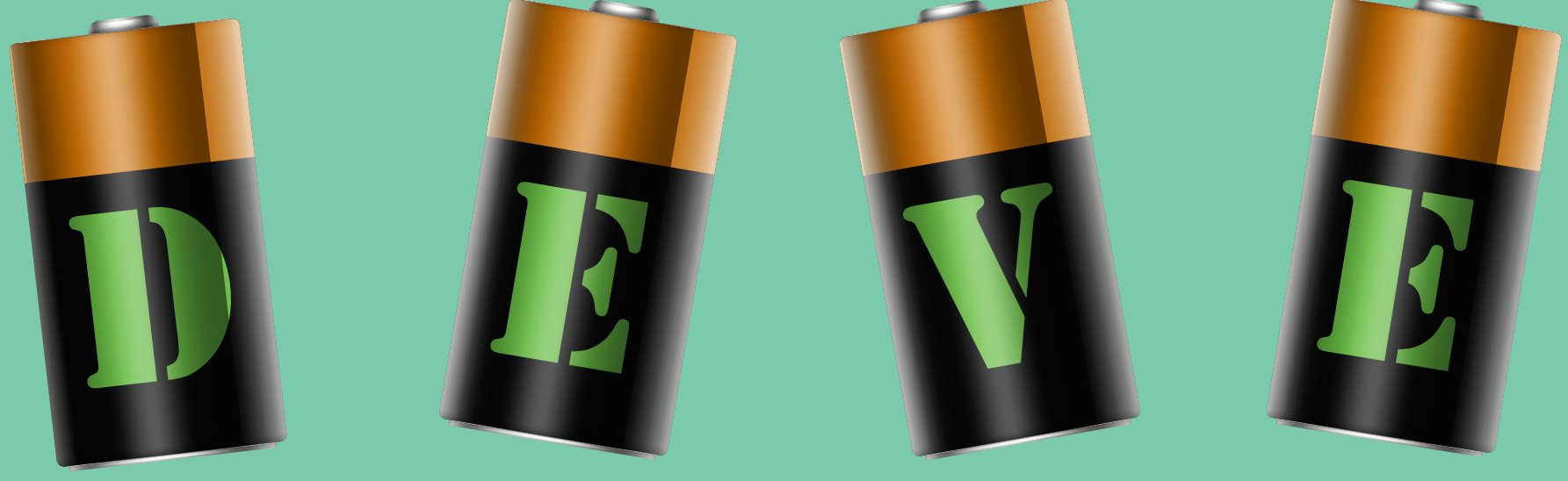

Durango **Electric** **Vehicle** **Enthusiasts**

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Electric Vehicles (EVs) - A better solution

Fuel Cost

The cost of fuel in Colorado for an EV is 80% less than a gas/diesel powered car.

Convenience

Never need to stop at a gas station! You "fill up" plugging in at home, at work, or while downtown.

Maintenance

No oil changes, no spark plugs, no tune-ups! There is less wear on the brakes. EVs recapture the energy used to slow the car (and when you're coasting downhill) to charge the battery.

Fuel Security

In 2018 when the U.S. is producing more of the oil it uses than ever before (about 70%), the price of oil is still subject to a volatile global market. Electricity is almost entirely domestically produced and has a predictable cost.

Joy

All EVs beat petroleum powered cars with smooth, rapid acceleration, and no engine noise – the ride is quiet. Batteries provide a low center of gravity, evenly distributed between the wheels. The cars handle extremely well on dry-road curves and in snowy and icy conditions.

Environment

EV's produce 37% less CO2 emissions than gas/diesel powered cars. Similar reductions occur in other air pollutants such as nitrogen dioxide, particulate matter, carbon monoxide, and volatile organic compounds.

What do Durango EV owners have to say?

"I purchased my electric car used, and it makes good economic sense. No oil changes, very low maintenance, and less than $20 a month to charge it. Best of all - zero emissions."
Nissan Leaf – Susan, Hair Stylist

"Zap and Bolt literally. I upgraded my EV to the Chevy Bolt (240-mile range). I drive around 800 miles a week for my business, from Durango to Albuquerque, Aspen, and Denver. The amount of money I save on gas pays for the car."
Chevy Bolt - Vijay, Local Business Owner

"When I drive my Leaf, I feel exhilarated as I never felt before with other cars. It rapidly, silently accelerates from a stop. The guilt I often felt while driving a petrol fueled car, knowing I was contributing to climate change, is absent."
Nissan Leaf – John, Retired NASA Engineer

"My Leaf is perfect for my daily commute from Durango to Three Springs. I get all the fuel I need by plugging in to a regular wall-socket at home overnight two or three times a week. The car has enough range to get me there and back again to Farmington, Cortez, Molas Pass, and Vallecito Creek."
Nissan Leaf - Sarah, Air Quality technical specialist

"We got our Volt so we could live surrounded by wildlife in our country home and travel into town without additional expense. We recharge the Volt off of our solar panels. It gains energy when going downhill. We'll never go back to a regular car."
Chevy Volt – Gordon, semi-retired Zoologist

"My Leaf gives me the satisfaction of getting everywhere without using any gas or oil — no tailpipe spewing out carbon emissions! I charge off of the solar panels on my house. The Leaf is incredibly quiet, and quick off the line — and it features heated seats and lots of storage space."
Nissan Leaf – Shelley – Non-profit exec. director

"The Prius Prime is a great car. It's a plug-in hybrid, so we get a full charge with our solar panels - that is enough to get us into town and back. For travel long-distance, it gets 60 mpg on gas. It has many features that make me feel like I'm George Jetson." *Prius Prime- Deb, Retired*

"Our Leaf is a comfortable, zippy car that gets us where we need to go so affordably. Since we have solar on our home, we basically drive around on sunshine. If needed while we're in town, we can plug in at one of several options now - Vantiv, LPEA, or the Smiley Building." *Nissan Leaf – Bonnie, Durango*

FREQUENTLY ASKED QUESTIONS

How far can you go on a full charge?	**Battery Electric Vehicle (BEV)** – These vehicles run only on electricity. If your daily round trip is more than the range, you need to plan to stop at a charging station. The charging station network in the Four Corners area is in its early stages – unless you have a Tesla. Tesla has invested in a nationwide charging network for their vehicles. Today you can use Tesla's network to drive from Durango to virtually anywhere in the US. Nissan and GM use a different plug type than Tesla. They are waiting for private and public entities to build a charging network for them.
	For the currently, commonly available EVs EPA estimated ranges are the following: • Nissan Leaf – 107 miles • Chevrolet Bolt – 200 miles • Tesla Model S – 208 miles • Tesla Model S Performance – 265 miles
	Plug-in Hybrid Electric Vehicle (PHEV) - PHEVs drive on all battery power until the battery gets too low, then they switch to being powered by a gas engine. With these vehicles, it does not matter if you run out of battery charge as long as you can get to a gas station before you run out of gas. PHEVs recharge the batteries when braking and coasting, increasing the gasoline miles per gallon.
	For the currently, commonly available PHEVs EPA estimated ranges are the following: • Chevy Volt – 53 mile electric range, 420 mile gas + electric range • Prius Prime – 25 mile electric range, 626 mile gas + electric range
What about tax breaks?	The federal government currently offers a $7,500 tax credit for BEVs. A smaller tax credit is available for PHEVs, with the amount dependent on the battery size in the car. EARLY ADOPTERS BENEFIT FROM THIS TAX CREDIT – It runs out for each vehicle manufacturer after they sell 200,000 vehicles. Tesla is expected to hit this limit in 2018. The other manufacturers will be later. Colorado is the best state in the union for BEV tax credit. They offer a $5,000 tax credit.
Is America the leading place for electric cars?	America is playing catch up to China, which had 17 times more fast chargers than the U.S. at the end of 2016. **https://www.iea.org/publications/freepublications/publication/GlobalEVOutlook2017.pdf** Six of the 10 major car companies that appear committed to electrification of their vehicle lines are Chinese. Most of them have international partners, but the international partners are the four that have equivalent commitments. **https://cleantechnica.com/2017/11/23/6-10-big-electric-car-companies-china/**
How often do you have to change the oil?	You never have to change oil, spark plugs, or any belts or hoses. EVs don't have those things. An electric motor has about 20 moving parts compared to gas- or diesel-powered engines 2,000 moving parts. With an EV, even brake pads last longer because the electric motor uses the energy created as the car coasts downhill to recharge the battery. An EVs maintenance is limited to checking the battery's condition annually. This check takes about 5 minutes. Other maintenance would include tire changes and issues which might pop up with the interior heating system or other accessories.
If you get your electricity from a coal-fired power plant, what makes you think you're saving emissions?	Using a Colorado-wide mix of electricity generation fuels, EVs create anywhere from 30% to 43% less greenhouse gas and other health-based air pollutants • Afdc.energy.gov (web site from US Department of Energy): • https://www.colorado.gov/governor/sites/default/files/colorado_electric_vehicle_plan_-_january_2018.pdf • Union of Concerned Scientists – Why Electric Vehicles? https://www.ucsusa.org/clean-vehicles/electric-vehicles#.Womlu0tlDVo
How can you drive to Denver if your car gets only 200 miles on a charge?	**You plan your route based on where the charging stations are.** Various applications for smart phones are available for this. Tesla has a more complete fast charging (Level 3) and you will be able to charge the car in 20 – 40 minutes. For non-Tesla BEVs, if Level 3 chargers are not yet available, you may need to plan a stop of 2 to 3 hours at Level 2 chargers midway through the trip. You can broaden your options by purchasing an adapter that would allow you to use Tesla charging stations. **Applications:** Plugshare, Chargepoint **Great website for detailed BEV trip planning:** http://www.jurassictest.ch/GR/
How long do batteries last?	**Most EV-makers warrant their batteries against malfunctions or defects for 8 years.** Nissan now also warrants its batteries against capacity loss (less than 70%) for 8 years. Battery capacity is important, because as capacity is lost, an EV's range goes down. Because EVs have only been in common use since 2012, no long term data exists on how fast the batteries will lose capacity. Several Durango 2012-2013 Nissan Leaf owners report they still get about 80 miles of range from their batteries. An independent study by Tesla owners and by Plugshare for all EV models found batteries retaining over 90% of their vehicles' original range, even after the odometer rolls well over 100,000 miles. https://insideevs.com/tesla-leaf-ev-battery-degradation/
Isn't disposal of batteries environmentally damaging?	**They can be reused** – "when a car battery has only 70 percent of capacity left—too little to serve in a car—that it may have about 10 years of useful life left as storage devices on the grid." **Can they be recycled?** – Recycling is currently not cost effective. It costs more to recycle the material than the resulting materials can be sold for. However a number of companies are researching and testing different methods of recycling and different battery chemistries that would be more easily recyclable. There is recognition that in the near future there will be a large market for providing recycling services for car batteries and for the metals recovered during the recycling process. Companies are currently investing to position themselves to meet that demand.
How do electrics handle in the mountains?	**EVs are excellent for mountain driving.** Because of the regenerative braking, they begin slowing the car as soon as you take your foot off the accelerator, making them much more responsive to the driver. Their low center of gravity keeps them steady on curves and less likely to slide in snowy and icy conditions. In a battery-powered electric vehicle, ***regenerative braking*** (also called regen) is the conversion of the vehicle's kinetic energy into chemical energy stored in the battery, where it can be used later to drive the vehicle.
What are the extra environmental and energy costs associated with manufacture of electric cars?	**As long as people want personal transportation which will take them hundreds of miles in day at high speeds, transportation is going to inflict damage on the environment.** All vehicles require mining for raw materials, plastics and other synthetic materials used in building them. However, the Union of Concerned Scientists found that battery electric cars generate *half* the emissions of the average comparable gasoline car, even when pollution from battery manufacturing is accounted for. **Union of Concerned Scientists – Cleaner Cars from Cradle to Grave** https://www.ucsusa.org/clean-vehicles/electric-vehicles/life-cycle-ev-emissions#.WommDEtlDVo